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AUTHOR Smith, Carolyn A.; Thornberry, Terence P.

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ABSTRACT

This study used data from the Rochester Youth Development Study to examine linkages between childhood maltreatment and later delinquency. Three central issues were addressed: (1) the magnitude of the relationship between early child maltreatment and later official and self-reported delinquency; (2) the possibility of spuriousness in this relationship; and (3) the impact of more extensive measurement of maltreatment on later delinquency. The final sample was comprised of 1,000 students attending seventh or eighth grade in 1988 and their primary caretakers, with males and students from high crime areas overrepresented. Data were collected through separate interviews with adolescents and caretakers. The child maltreatment measure was based on information from Child Protective Services records. Five indicators of maltreatment were used, prevalence and frequency of maltreatment, duration, number of types of maltreatment, and total severity score. Outcome measures included official measures of number of police contacts as a juvenile or arrests as an adult and self-report of delinquency from eighth through twelfth grades. Delinquency indices were general, serious, moderate, minor, and violent delinquency. Results revealed a significant relationship between child maltreatment occurring before age 12 and subsequent self-reported and official delinquency and the relationship, especially for more serious forms of delinquency, remained when controlling for other factors such as race/ethnicity, sex, underclass status, and family structure. The results also suggested that more extensive maltreatment is related to higher rates of delinquency. Appendices provide exemplars of levels of abuse severity and the delinquency scales. (Four tables delineate findings. Contains 65 references.) (AA)

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Rochester Youth Development Study

Working Paper No. 17

The Relationship Between Childhood Maltreatment and Adolescent Involvement in Delinquency+

Carolyn A. Smith*
Terence P. Thornberry**

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Rochester Youth Development Study
Hindelang Criminal Justice Research Center
The University at Albany
135 Western Avenue
Albany, NY 12222
Telephone: 518-442-5600
Fax: 518-442-5603

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Hindelang Criminal Justice Research Center
The University at Albany
Albany, NY 12222

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The Relationship Between Childhood Maltreatment and Adolescent Involvement in Delinquency*

Carolyn A. Smith*
Terence P. Thornberry**

February 1994

* School of Social Welfare
** School of Criminal Justice

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ABSTRACT

Recent research suggests a link between childhood maltreatment and later involvement in delinquency. The present study examines this issue using both official and self-report data from the Rochester Youth Development Study. Analysis addresses three central issues: the magnitude of the relationship between early child maltreatment and later delinquency, both official and self-reported; the possibility of spuriousness in this relationship; and the impact of more extensive measurement of maltreatment on later delinquency. A significant relationship between child maltreatment and both self-reported and official delinquency is found and this relationship, especially for more serious forms of delinquency, remains when controlling for other factors. The results also suggest that more extensive maltreatment is related to higher rates of delinquency. Implications and suggestions for further research are discussed.

INTRODUCTION

In recent years researchers have become increasingly concerned with the long-term consequences of child abuse and maltreatment (Cicchetti and Toth, 1993; Widom, in press; Wolfe, 1987; Zingraff et al., 1993; 1994). An accurate understanding of the extent to which maltreatment is a significant risk factor for negative outcomes is particularly crucial because recent estimates of the prevalence of child maltreatment suggest that it is a much more substantial problem than we ever suspected (Garbarino, 1989; National Center on Child Abuse and Neglect, 1981; 1988). In addition, we increasingly find evidence of an extensive range of potentially harmful sequelae for children and adolescents who are victims of maltreatment, including involvement in various forms of delinquent and criminal behavior (Lewis et al., 1989; Widom, 1989a; 1989c). The precise effect of experiences of child maltreatment on later involvement in delinquency, especially violent delinquency, however, is somewhat controversial and not clearly resolved based on the current literature. The present article examines the impact of childhood maltreatment on various indicators of delinquency in an effort to further our understanding of this relationship. We begin with a brief review of prior studies of this issue and then, based on that review, pose the specific research questions addressed in this analysis.

LITERATURE REVIEW

Initial estimates of the link between early childhood maltreatment and later delinquency were based on clinical, cross-sectional, or retrospective studies (see, for example, Kratcoski and Kratcoski, 1982; Lewis et al., 1979; Mouzakitis, 1981; Silver et al., 1969; Steele, 1976; Wick, 1981). While these studies sensitized the field to this issue, they produced widely varying estimates -- ranging from 10 to 85 percent -- of the proportion of delinquents who have a maltreatment background. Moreover, since these studies suffered from a number of methodological problems such as retrospective designs, unrepresentative samples, and uncontrolled confounding variables, it is hazardous to base a firm understanding of the relationship between maltreatment and delinquency upon them.[1] Because of that, our review is

1. The results of these earlier studies, as well as their methodological limitations, have been reviewed by Garbarino and Plantz (1986), Howing et al. (1990), and Widom (1989a).

limited to more recent studies that use prospective designs, include control groups, and trace childhood maltreatment victims forward in time to see if maltreatment increases the risk of later delinquency.

Bolton et al. (1977) were among the first researchers to use a prospective design. They studied a sample of 5,392 children reported for child maltreatment in Arizona and a comparison group of about 900 non-maltreated siblings. Sixteen percent of the maltreated group had juvenile court records for delinquency, compared to 7.8 percent of the non-maltreated siblings. By using siblings as comparison subjects, many important confounding variables -- such as class and race -- were held constant, although the effect on siblings of living in a maltreating family was not explored.

Alfaro (1981) studied 4,465 children referred to New York State protection agencies for maltreatment during 1952 and 1953. He investigated their juvenile court histories through 1967 and found that about 10 percent of the maltreated children were later reported as being delinquent or ungovernable. This compared to 2 percent of juveniles in the state overall.

McCord (1983) used early case records on 233 males, collected between 1939 to 1945, to identify subjects who were "neglected," "abused," "rejected," or "loved." Subjects in these categories did not differ in terms of the proportion living in poverty or from broken homes. In a follow-up of official records 40 years later, McCord found significant differences among the groups with respect to delinquency. During the juvenile years the rejected youngsters had substantially higher rates of delinquency than the loved youngsters, with the neglected and abused groups falling in between. McCord also reported that "close to half (45%) of the abused or neglected boys had been convicted for serious crimes, became alcoholics or mentally ill, or had died while unusually young" (1983: 270).

In a series of recent articles Widom (1989a; 1989b; 1989c; 1991a) has examined involvement in criminal and delinquent behavior for maltreated subjects and matched non-maltreated subjects. The matching design controls for the impact of major demographic variables, including age, sex, race, and social class. Her prospective research finds that earlier

maltreatment increased the rates of official delinquency. The prevalence of official delinquency among those who were maltreated is 26 percent, in comparison to 17 percent in the matched control group; in other words, maltreatment increases the risk of offending by about 50 percent. On average, maltreated children began offending earlier and had a greater number of offenses than the matched comparison children. In addition, Widom (1989a) suggests that physical abuse is less strongly related to delinquent outcomes than is a history of neglect.

Both social learning theory and more generic theoretical assumptions about the intergenerational transmission of violence suggest that the association between maltreatment and violent delinquency should be stronger than the association between maltreatment and other forms of delinquent behaviors (Lewis et al., 1989; Simons et al., 1993; Widom, 1989c). Widom (1989a), however, does not find clear-cut evidence of increased violent delinquency among maltreated adolescents. She concludes that maltreated children appear to have higher rates of general delinquency, especially status and property offenses, but not necessarily higher rates of violent delinquency.

Another recent study also indicates that maltreatment may be a risk factor for general delinquency but not violent delinquency. Zingraff and his associates (1993; 1994) randomly sampled one in three cases reported to the Registry of Child Abuse and Neglect in a North Carolina County from 1983-1989. They compared these maltreated children with two smaller random samples of 281 children from the general school population and 177 children from a caseload of welfare recipients (to represent impoverished children). Maltreated children were excluded from each of the two comparison groups. Zingraff et al. (1993) find that maltreated children have higher rates of juvenile court referrals than either of the comparison groups. These effects, however, are only observed for general delinquency and status offenses; they are not observed for violent and property offenses. When age, gender, race, and family structure are held constant, a history of maltreatment significantly increases the odds of general delinquency when the comparison group is the school sample. In the comparison to the poverty sample, however, Zingraff and associates find that the maltreatment effect is no longer significant except

when status offenses are used to measure delinquency. Finally, Zingraff et al. (1993) report little distinction in the effect of different types of maltreatment on the risk for later delinquency.

The studies reviewed so far rely entirely on official records to measure delinquency and there is little information in the literature about whether maltreatment is also a risk factor for self-reported delinquency. This is an important gap in our knowledge since it is possible that the link between maltreatment (especially when it is measured through official records) and official delinquency simply reflects the tendency of some families to be dealt with by official agencies. It may or may not indicate that maltreatment is a risk factor for behavioral involvement in delinquency.

We have found only two studies that used self-report measures of delinquency and both are based on retrospective designs. Doerner (1987) studied a convenience sample of college students, a marginally appropriate group for the study of this topic. He measured both maltreatment and delinquency retrospectively and does find that maltreatment is correlated with certain types of self-reported delinquency, including serious crime. Kruttschnitt and Dornfeld (1993) compared a clinical sample of the children of abused women and a community sample of children matched for gender, race, and poverty. Measures of family violence were gathered retrospectively from maternal respondents, and self-reported delinquency data were gathered from the children. Results indicate earlier initiation and more frequent delinquency among those exposed to family violence. However, these results are not strictly comparable to other studies cited here, since the independent variable, family violence, is operationalized to include spouse violence as well as maltreatment, and the maltreatment measures are based on retrospective reports by the mother.

In sum, a number of studies have examined the role of early childhood maltreatment as a risk factor for later involvement in delinquency. Although these studies generally indicate that maltreatment is a risk factor, there are a number of unresolved issues about the relationship between these variables. First, estimates of the strength of the effect of maltreatment on delinquency vary substantially (compare, for example, Widom, 1989a and Zingraff et al., 1993)

and there are no prospective estimates of the effect of maltreatment on self-reported delinquency. Second, we have yet to examine the role of maltreatment as a risk factor for delinquency in representative samples of the population not preselected on the basis of maltreatment. Third, findings of past research are inconclusive about the effect of maltreatment on different categories of offending, especially serious and violent offending. Finally, research in this area has inconsistently considered the impact of different dimensions of maltreatment, such as exposure to multiple types of maltreatment or the seriousness and extensiveness of the maltreatment, on later involvement in delinquency. This issue is particularly important because reliance on a global measure of maltreatment may underestimate the impact of maltreatment on delinquency by combining less severe and more severe cases in a single measure.

In order to help resolve these issues, we pose the following questions in this analysis:

1) Is childhood maltreatment a significant risk factor for both official and self-reported measures of delinquency?

2) Is childhood maltreatment a risk factor for various types of delinquent behavior, including violent offending?

3) Is the relationship between maltreatment and delinquency spurious, or is it maintained when relevant variables are held constant?

4) Are more refined measures of maltreatment -- for example measures that incorporate such dimensions as the extensiveness and severity of abuse -- more strongly related to delinquency than simple, global measures of abuse?

The current study offers a number of methodological features which facilitate a more detailed look at these issues. The study is based on a representative sample which is not preselected on the basis of abuse or delinquency. The data allow for the measurement of a number of possible confounding variables to examine the issue of spuriousness. There is also great breadth in the measurement of both maltreatment and delinquency; the measurement of maltreatment is based on a comprehensive and validated classification system (Cicchetti and Barnett, 1991) and delinquency is measured by both self-report and official data.

METHODS

The data are drawn from the Rochester Youth Development Study (RYDS), a multi-wave panel study in which youth and their primary caretakers were interviewed every six months over a four-and-a-half-year period. In addition, data were collected from the Rochester Public Schools, Police Department, Department of Social Services, and other agencies that have contact with RYDS subjects. This analysis makes use of interview data collected in Waves 2 through 8, data on maltreatment drawn from the Monroe County Child Protective Service records, and arrest data from the Rochester Police Department. At Wave 2 the subjects were in the Fall semester of the eighth or ninth grade, and at Wave 8 they were in the Fall semester of the eleventh or twelfth grade.

Sample

The target population for RYDS were students attending the seventh or eighth grade of the Rochester, New York public schools in the Spring of 1988. A stratified sample was selected from this population so that students at high-risk for delinquency and drug use were proportionally overrepresented and the findings could be weighted to represent the target population.

To accomplish these objectives, the sample was stratified on two dimensions. Males were oversampled (75% vs. 25%) because they are more likely than females to engage in serious delinquency (Blumstein et al., 1986) and students from high-crime areas were oversampled since living in a high-crime area increases the risk of offending. Areas with high crime rates were identified by assigning each census tract a resident arrest rate reflecting the proportion of the tract's total population that was arrested by Rochester police in 1986.

Of the 4,103 students in the seventh and eighth grades in the Spring of 1988, 3,372 (84%) were eligible for the sample.[2] To generate a final panel of 1,000 students, 1,334 were initially

2. Students were considered ineligible if they moved out of the Rochester school district before the Wave 1 cases were fielded, if neither English nor Spanish was spoken in the home, if a sibling was already in the sample, or if they were older than the expected age for eighth graders given the Rochester schools' admission policy.

selected based on an estimated nonparticipation rate of 25 percent (Elliott et al., 1983). All students in the census tracts with the highest resident arrest rates (approximately the top one-third) were asked to participate, whereas students in the remaining census tracts were selected at a rate proportionate to the tract's contribution to the overall resident arrest rate. Once the number of students to be selected from each tract was determined, the student population was stratified by sex and grade, and students were selected from those strata at random. Based on these stratification procedures, a final panel of 1,000 students and their primary caretakers was selected for the study.[3] Because the probability of a youth living in a particular census tract is known, this sampling strategy provides a means for weighting the cases to represent the initial panel of all seventh and eighth graders in the Rochester Public Schools. The sample is weighted in the analyses presented here.

The number of cases used in the following analyses varies somewhat depending on the particular variables that are included. The smallest number of cases -- 823 -- represents 82 percent of the original sample and there is no evidence of differential attrition. In the total panel males are overrepresented by approximately 3 to 1 (74% to 26%) and African-Americans comprise the majority of the sample (68%) with 15 percent of the sample being white and 17 percent Hispanic adolescents.[4]

Adolescent interviews were typically conducted in a private room provided by the schools. Students who had dropped out of school, moved to a different school district, or were institutionalized were tracked and interviewed in an appropriate setting. Caretakers were interviewed in their homes. Adolescents and caretakers were not present at each others' interviews and each interview lasted approximately one hour.

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3. Of these, 981 entered the panel at Wave 1; 19 entered at Wave 2.

4. See Thornberry et al. (1993) and Farnworth et al. (1990), for more complete discussions of the sampling plan and retention rates.

Measurement

Maltreatment

Our measure of maltreatment is based on data obtained from the Child Protective Services records of the Monroe County Department of Social Services, the county of residence for all subjects at the start of the RYDS project. For each of our subjects, we recorded any instance of substantiated abuse or maltreatment, from birth through 1992.

These records provide detailed information on a number of important dimensions of maltreatment, including the type and the severity of maltreatment. To capture this information we used the classification system developed by Cicchetti and Barnett (1991) for which there is ample evidence of validity and reliability (Barnett et al., 1993). For each incident of maltreatment, the Cicchetti-Barnett schema encodes such information as: the dates the case was opened and closed, the age of the victim, victim-offender relationships, the type or types of abuse, and for each type its level of severity.

Seven types of maltreatment are included in the classification system. They are: physical abuse, sexual abuse, emotional maltreatment, moral/legal maltreatment, educational maltreatment, physical neglect, and lack of supervision. In addition, the classification system assesses the severity of each of these types of maltreatment. Physical abuse, for example, can vary from overly severe spankings to life-threatening assaults that result in permanent injuries. This range of severity is captured on a 5-point scale in the Cicchetti-Barnett classification system. Exemplars of each level of severity have been developed (see Appendix 1) and coders use these exemplars to score each instance of physical abuse.[5] The severity of the other six types of maltreatment are also scored on 5-point scales and exemplars for each are available (Barnett et al., 1993). Since instances of maltreatment typically involve more than one type of maltreatment, the total severity score for an incident is calculated by summing the severity score

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5. Inter-rater reliability was assessed throughout the coding process and the coders agreed on 88 percent of the assessments. Disagreements were resolved by consensus scoring and by discussion with an MSW with extensive clinical experience.

for each type of maltreatment that occurred. For example, if during the same incident the offender sexually abused the victim (severity score = 4) and physically abused the victim (severity score = 3) the total severity score for that incident would be 7.

Based on this information, five indicators of maltreatment have been created for the present analysis. They are:

1) Prevalence of maltreatment. This variable denotes whether or not the subject was a victim of any type of maltreatment prior to age of 12.

2) Frequency of maltreatment. This measure is the number of different incidents of maltreatment up to the age of 12.

3) Duration. This variable indicates the duration of the official investigation and monitoring of the family subsequent to the initial report of maltreatment. It can be viewed as a proxy for the severity and complexity of the case. If the subject experienced more than one incident of maltreatment, the duration scores are summed across all incidents for this analysis.

4) Number of types of maltreatment. As indicated above, the classification scheme includes seven different types of maltreatment. This variable indicates the number of distinct types of maltreatment that the subject experienced. As such, it ranges from 1 to 7 and is akin to the "ever variety" scores that are often used in self-reported delinquency studies.[6]

5) Total severity score. Each incident of maltreatment receives a severity score based on the scoring system described above. The total severity score used in this analysis is the sum of severity scores across all incidents of maltreatment for each subject.

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6. There are only a total of 219 different incidents of maltreatment in this data set and we find, as have others (Cicchetti and Barnett, 1991), that many incidents involve multiple types of maltreatment. Because of that, there are too few cases to reliably analyze the impact of different types and combinations of types of maltreatment on delinquency. Moreover, Zingraff et al. (1993) do not find significant differences by type of maltreatment. For these reasons we only examine the impact of the simple variety of maltreatment experiences in this paper.

Outcome Measures

Unlike prior research in this area which has relied almost exclusively on official measures of delinquency, the RYDS data set contains both official and self-report measures. Each is briefly described here.

Official Data

The official measure of delinquency is based on the number of times each subject had an official contact with the police as a juvenile or an arrest as an adult. Official contacts include cases in which the juvenile was "warned and released" by the police and an official record of the event was maintained, as well as cases in which the juvenile was referred to Family Court. These data were collected from the files of the Rochester Police Department but cover all police agencies in Monroe County, as the Rochester Police Department maintains a county-wide registry. The official data cover the time period from the subject's first official contact through 1992, when the subjects averaged 17 years of age.

Self-Report Measures

A self-report inventory containing 32 delinquency items is asked at each interview. The items range from petty theft and public rowdiness to armed robbery and serious assault. Respondents are asked if they committed each offense during the past six months and, if so, how often. Prior to analysis, coders screen all responses to ensure that they fit the category of delinquency being measured and that they are not such trivial actions that they would be ignored by law enforcement officials.

In the present analysis we use cumulative measures of self-reported delinquency covering Waves 2 through 8, the period from eighth and ninth grades to eleventh and twelfth grades. Based on the overall inventory, five indices of delinquency are used in this analysis.[7] These are:

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7. The items composing each index are presented in Appendix 2.

1) General delinquency: a 26-item omnibus delinquency index consisting of both minor and serious offense types.

2) Serious delinquency: an eight-item index of serious delinquent behaviors focused on violent and property offenses, including such items as armed robbery and burglary.

3) Moderate delinquency: a nine-item index of moderately serious offenses, including joyriding and simple assault.

4) Minor delinquency: a two-item index consisting of minor theft and being loud and rowdy in a public place.

5) Violent delinquency: a six-item index of involvement in violent offenses.[8]

Control Variables

A number of variables are held constant in the following analysis. Our measure of maltreatment is based on Monroe County Department of Social Services case records. Since not all subjects were residents of Monroe County for their entire lives, some subjects could be erroneously classified as non-maltreated if they lived outside of Monroe County at the time of the maltreatment. To control for this effect we include a dummy variable indicating whether the subject began their first grade in the Rochester public schools. Of the total panel, 791 subjects (79%) began their schooling in the Rochester schools and only 21 percent entered the Rochester schools at a later grade. While this measure obviously does not cover mobility prior to the first grade, it is the best measure available in this data set.[9] In addition to including this variable as a control in the multivariate analysis, we re-estimated all the results reported below for only the

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8. There are no duplicate items on the serious, moderate and minor indexes but the six items on the violent delinquency index are also included on either the serious or moderate indexes.

9. The problem of misclassification brought about by mobility works against the study hypothesis. That is, we run the risk of including maltreated subjects in the non-maltreated group which would make it harder to show that maltreatment is a risk factor for delinquency. In other words, this introduces a conservative bias to this test of the hypothesis.

791 subjects who began first grade in the Rochester schools and none of the substantive results reported here change.

We also hold constant race/ethnicity, sex, underclass status, and family structure since these factors have been shown to be related both to maltreatment and delinquency. Sex is a dichotomous dummy variable with females as the comparison group; African-American and Hispanic are dummy variables with non-Hispanic whites as the comparison group. Underclass status is a measure of social class representing those who are most socioeconomically disadvantaged. It is derived from data on the parent interview; if the principal household wage-earner is unemployed, if the family received welfare benefits, or if the household income is below the federally-defined poverty guidelines for a family of that size, the family is classified as underclass.[10] Family structure is a dichotomous variable denoting households where both biological parents are in the home, in comparison to other types of family structures.[11] Both underclass status and family structure were measured temporally prior to the estimate of delinquency.

The temporal order of the key variables in the analysis, maltreatment and delinquency, is an important issue since the main question for analysis is whether childhood maltreatment is a risk factor for adolescent delinquency. For the purposes of this study, we define child maltreatment as that which occurs before the subject's 12th birthday. The cumulative delinquency measures begin at Wave 2 when the mean age of the subjects was 13.9. Since the self-report questions cover the 6-month period prior to the interview, all of the subjects were at least 12 during this recall period. Thus, the occurrence of maltreatment in fact precedes the delinquency that is measured in this analysis.

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10. See Farnworth et al. (1994) for a complete discussion of the definition and measurement of this variable.

11. We explored a number of other measures of family structure and this simple dichotomy seemed quite robust.

We considered the possibility that early onset of delinquency not captured by our dependent variable may actually precede maltreatment, since a number of researchers have drawn attention to the possibility of "child effects" (Howing et al., 1990; Lytton, 1990; Sampson and Laub, 1993;), as well as to the early onset of serious delinquency (Loeber, 1987).[12] Delinquency that occurred prior to Wave 1 is not measured in detail in our data. Subjects do, however, report age of onset of various delinquent acts in the Wave 1 interview and very small numbers of subjects report ages of onset prior to age 8 (in no case more than 7%). In order to reduce the possibility of confounded temporal order between these variables, we repeated all the analyses reported below restricting the cases to those who were under 8 at the time of the maltreatment. The substantive findings are the same as those reported here: there is no change in the significance of maltreatment in any of the analyses.[13] In order to maximize the number of subjects in the maltreated group, however, we use the age 12 cutoff for maltreatment in the bulk of analysis to follow.

RESULTS

We begin by examining the prevalence of childhood maltreatment for the members of the Rochester Youth Development Study. The overall prevalence of maltreatment, including adolescent maltreatment, is 20 percent. This rate is somewhat higher than rates reported in national data (National Center on Child Abuse and Neglect, 1981; 1988), and is probably related both to the urban population and the high proportion of minority youth in the sample, factors that have been related to higher rates of official maltreatment (Garbarino and Ebata, 1987; Hampton, 1987; Hampton and Newberger, 1985). Restricting the analysis to cases of maltreated under age

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12. We maintain that a possible effect of delinquency on maltreatment is more likely during adolescence when the power balance between parents and children shifts, and maltreatment may well represent different family processes (Garbarino, 1989). For this reason, youth with maltreatment reports only at adolescence are not counted as maltreated in this study.

13. Results are available from the authors.

12 results in a prevalence rate of 13.6, as reported in Table 1. These subjects were maltreated in a total of 219 separate incidents, for an average of 1.5 incidents per subject.

Table 1 also presents the prevalence of maltreatment for major demographic subgroups. There are no significant differences in the prevalence of maltreatment by gender or race. There are, however, substantial differences by social class and family structure. Almost one-fifth (19.5%) of the youngsters reared in underclass families were victims of maltreatment while 8.2 percent of the non-underclass respondents were maltreated. The largest difference is observed for family structure. Only 3.2 percent of the boys and girls who resided with both biological parents at Wave 1 had a history of maltreatment but 18.6 percent of those in other family situations had been maltreated. With this demographic information as a backdrop we turn now to the central issue of this analysis -- the relationship between earlier maltreatment and later involvement in delinquency.

- TABLE 1 ABOUT HERE -

Maltreatment and Delinquency

The relationship between childhood maltreatment and involvement in adolescent delinquency is presented in Table 2. Panel A examines this relationship for the prevalence of delinquency and Panel B does so for the frequency of delinquency. Both bivariate relationships and multivariate relationships, controlling for gender, race/ethnicity, underclass status, family structure, and attending Rochester schools by first grade, are presented.[14]

- TABLE 2 ABOUT HERE -

There is a significant bivariate relationship between maltreatment and the likelihood of official delinquency. Forty-five percent of the maltreated subjects had an arrest record as compared to 31.7 percent of the non-maltreated subjects. In addition, the logistic regression coefficient is significant indicating that maltreatment affects the prevalence of official

14. Coefficients for the control variables are not presented since the focus of attention is on the impact of maltreatment on delinquency after these variables are controlled; the results are available upon request.

delinquency even when the control variables are held constant. At the mean of the dependent variable, which is .32, a history of maltreatment increases the probability of having an official record by .13. In other words, the probability of official delinquency, given a history of maltreatment, would move from .32 to .45 which is almost identical to the observed prevalence rate of .451. This indicates that the control variables have a minimal impact on the relationship between maltreatment and delinquency. This finding replicates those reported by Widom (1989b) concerning official measures of delinquency. These prevalence rates are consistent with the magnitude of the relationship reported by Zingraff et al. (1993), although they are much higher as the RYDS subjects are followed through a longer portion of the life course.

The remaining data in Table 2A examine the relationship between maltreatment and self-reported delinquency, an issue that has not been examined in prior prospective studies. All of the bivariate relationships are significant, suggesting that maltreatment is not only related to later official delinquency but also to self-reported delinquency. Only two of these relationships remain significant once the control variables are held constant, however. They are the effects for moderate delinquency and for violent delinquency. For moderate delinquency a history of maltreatment increases the probability of delinquency by .13 and for violent delinquency it increases the probability by .11; both changes are assessed at the means of the dependent variables (.57 in both cases). As was the case for official delinquency, these results suggest that the control variables have a rather minor impact on the relationship between maltreatment and delinquency. For moderate delinquency, a history of maltreatment increases the probability of delinquency from .57 to .70, only slightly less than the observed prevalence rate of .713; for violent delinquency it moves the probability of delinquency from .57 to .68, again only slightly below the observed prevalence rate of .696.

Table 2B examines the impact of childhood maltreatment on the logged frequency of involvement in delinquency during adolescence. Beginning first with the official measure, we see that the non-maltreated subjects were arrested an average of .8 times as compared to 1.4

times for the maltreated subjects. This relationship is maintained when the control variables are held constant ($b = .21$, $p < .05$).[15]

Turning to the self-report measures we see that, with the exception of minor delinquency, all the bivariate relationships are significant. Moreover, the bivariate relationships appear particularly strong for serious delinquency and for violent delinquency; maltreated subjects report almost twice as many serious delinquencies and violent offenses as do non-maltreated subjects. The OLS results examine this relationship when gender, race/ethnicity, underclass status, family structure, and mobility are held constant. They indicate that maltreatment continues to exert a significant impact on serious, moderate, and violent delinquency, but not on general or minor delinquency.

The results presented in Table 2 allow us to answer the first three research questions posed earlier -- is maltreatment related to official and self-reported delinquency, is it related to involvement in violent delinquency, and are these relationships spurious? The results suggest that childhood maltreatment is a significant and non-spurious risk factor for official delinquency, for violent self-reported delinquency, and for moderate self-reported delinquency. It is inconsistently related to serious delinquency, being a significant predictor for the frequency but not the prevalence of serious delinquency. Finally, childhood maltreatment is not a significant risk factor for either minor delinquency or general delinquency, the omnibus scale containing a mixture of serious and trivial delinquencies. Overall, maltreatment appears to be a risk factor for the more serious forms of delinquency and not to be a risk factor for the less serious forms of delinquency.

The Measurement of Maltreatment

The final question that guides this analysis concerns the impact of the way in which maltreatment is measured. To this point we have measured maltreatment as a simple dichotomy,

15. The unstandardized coefficients refer to a one unit change in the independent variable (unlogged) on the log of the dependent variable and are therefore not easily interpretable. An assessment of the anti-logged values indicate that, when significant, the impact of maltreatment on delinquency is sizeable even when other variables are held constant.

comparing adolescents who did and did not have an official record of maltreatment as children. This measure ignores the fact that maltreatment can vary along such dimensions as frequency, severity, duration, and type. Indeed, we hypothesize that children exposed to more extreme levels of maltreatment will have higher rates of delinquency than children exposed to less extreme levels of maltreatment. Whatever causal mechanisms link early maltreatment to later delinquency ought to operate most strongly as the frequency, severity, duration, and variety of maltreatment increase.

To examine this hypothesis, for each of these four dimensions of maltreatment, we have divided the maltreated children into two groups: those falling into the lowest two-thirds of the distribution and those falling into the highest one-third of the distribution. This cutting point was chosen to better identify youth who experienced the most serious forms of maltreatment. Because the distributions for these variables are skewed, the actual cutting points are slightly above or below the target of the 67th percentile.[16] Table 3 presents the frequency of delinquency for the non-maltreated youth, those in the bottom two-thirds, and those in the top one-third on each of these four dimensions of maltreatment, along with one-way ANOVAs and Scheffe tests. The Scheffe test for multiple comparisons "...is known to be conservative in terms of both α and power" (Toothaker, 1993: 51). To conserve space, only the measures of delinquency consistently found to be significantly related to maltreatment in the previous analysis are included.

- TABLE 3 ABOUT HERE -

The results for self-reported moderate delinquency differ substantially from those for the other three indicators of delinquency. For moderate delinquency none of the ANOVAs or Scheffe tests is significant. Moreover, higher delinquency rates are associated with those below

16. For the number of incidents it is the 72nd percentile; for the total severity of maltreatment it is the 58th percentile; for the duration of all incidents it is the 62nd percentile; and for the number of types of maltreatment it is the 77th percentile. We experimented with other cutting points, especially dividing the maltreated group at the median and at the 75th percentile. The former produced results similar to those reported here and the latter produced somewhat erratic results as the number of cases in the top quartile was rather small.

the 67th percentile. This finding is consistent with the thrust of findings reported above; maltreatment does not appear to be strongly related to the less serious forms of delinquent involvement. Given this finding, the following discussion only refers to the other three indicators of delinquency -- official delinquency, self-reported serious delinquency, and self-reported violent delinquency.

When only these measures are examined there is mixed support for the hypothesis that children exposed to the most serious forms of maltreatment will be at the greatest risk for later involvement in delinquency. On the one hand, all twelve ANOVAs (three types of delinquency by four dimensions of maltreatment) are significant and in all twelve cases the highest rates of delinquency are observed for those in the top one-third of the maltreatment distributions. Moreover, the elevation in risk of delinquency for these youngsters, as compared to the non-maltreated group, is quite substantial. Consider, for example, the data in Panel A concerning the number of different incidents of maltreatment. Those in the top third of the distribution were arrested 2.8 times as often as the non-maltreated subjects, reported 2.3 times as many serious offenses, and 1.9 times as many violent offenses. All of these results suggest that exposure to more serious forms of maltreatment is a substantial risk factor for serious forms of delinquency.

On the other hand, a comparison of those exposed to less extreme and more extreme forms of maltreatment offers less support for this hypothesis. While it is true that the highest rates of delinquency are found for those above the 67th percentile, the distinction between these subjects and those below the 67th percentile is generally rather modest. Only four of the twelve Scheffe tests comparing these groups are significant, and all four are for official arrests. The data on Panel A can again illustrate the general pattern of results. While there is a substantial difference in number of arrests (1.11 versus 2.34) for those below and above the 67th percentile, there are rather modest differences in self-reported serious delinquency (5.11 versus 6.22) and violent delinquency (10.95 versus 11.29). Similar patterns can be seen in the other three panels of Table 3.

Overall, the data in Table 3 confirm the general finding that there is a relationship between childhood maltreatment and later delinquency and offers some support for the notion that the strength of this relationship increases as the seriousness of the maltreatment increases. The highest rates of delinquency are observed for those maltreated youngsters in the top third of the distributions on each of these dimensions of maltreatment but the differences between them and those in the bottom two-thirds are not very large.

One reason the differences between the maltreatment subgroups may not be very large is that the sample of maltreated children may be too small to detect these differences. There are only 124 maltreated subjects in the analysis in Table 3 and the number in the top third varies from 29 to 56. Recall that only incidents of maltreatment occurring before age 12 are included to maintain correct temporal order between maltreatment and delinquency. If this age restriction is relaxed, the total sample of maltreated subjects increases from 124 to 189 and the number of different incidents increases from 219 to 347, which may allow for a better test of this hypothesis.

We repeat the analysis reported in Table 3 for this larger sample to maximize the number of observations, recognizing that this distorts the temporal order between maltreatment and delinquency (see Table 4). For this larger sample there appears to be more support for the hypothesis that more serious forms of maltreatment are more strongly related to delinquency than are less serious forms of maltreatment. All of the ANOVAs, including those for moderate self-reported delinquency, are significant. The highest rates of delinquency are consistently observed for those in the top third on the maltreatment variables (the only two exceptions are for moderate delinquency). Also, the differences between those above and below the 67th percentile, especially for the self-report scales, tend to be larger here than in Table 3. This is seen most clearly in Panel D concerning the number of different types of maltreatment the subject experienced. As compared to subjects below the 67th percentile, those above the 67th percentile were arrested 1.6 times as frequently, reported 1.9 times as many serious offenses, 1.6 times as many violent offenses, and 1.5 times as many moderate offenses. In general, it appears

that increasing the sample size by removing the age restriction shows more clearly the association between exposure to more serious forms of maltreatment and greater involvement in delinquency. Unfortunately, the temporal order between maltreatment and delinquency is unavoidably blurred in this analysis.

- TABLE 4 ABOUT HERE -

DISCUSSION

In the past few decades increasing attention has been paid to the phenomenon of child maltreatment and its long-term impact on youth development. A growing body of research (e.g., Cicchetti and Carlson, 1989; Widom, in press; Wodarski et al., 1990) suggests that being maltreated as a youngster increases the risk of a variety of negative consequences during childhood, adolescence, and adulthood. This study has examined the impact of childhood maltreatment on one particular outcome, adolescent involvement in delinquency. Using data from the Rochester Youth Development Study, the present study both replicates and extends the results of previous studies examining this issue.

First, like previous studies (e.g., Widom, 1989b; Zingraff et al., 1993) we found that a history of childhood maltreatment significantly increases the chances of involvement in delinquency as measured by both official and self-reported delinquency. While maltreatment is certainly no guarantee of later delinquency, a history of maltreatment significantly increases the risk of being arrested and the frequency of arrests. Moreover, the results clearly indicate that the impact of maltreatment is not limited to increasing the risk of official delinquency. A history of maltreatment was found to be related to more serious forms of self-reported delinquency including violent, serious, and moderate forms of delinquency. Maltreatment is not, however, significantly related to minor delinquency or an omnibus index that includes a mixture of offense types.

In addition, we found that maltreatment is a significant predictor of the prevalence of official, moderate, and violent delinquency when race/ethnicity, gender, social class, family structure, and mobility are held constant. It is also a significant predictor of the frequency of

official, serious, moderate, and violent forms of delinquency when these variables are controlled. These data provide some confidence that the effects of maltreatment are not spurious and are independent of such variables as underclass status and family structure.

Previous studies have not explored the substantial heterogeneity that exists within the category of maltreatment with respect to the extensiveness and variety of maltreatment and, as a result, may underestimate the impact of maltreatment on delinquency. We hypothesized that if exposure to maltreatment increases risk for later delinquency, exposure to more extensive maltreatment should have an even stronger impact on later delinquency. To test this hypothesis we measured the frequency, severity, duration, and variety of maltreatment in the child's history, and compared subjects falling above the 67th percentile on each of these dimensions to those falling below the 67th percentile and to the non-maltreated subjects.

The results are somewhat mixed. The subjects in the top third of the distributions consistently exhibited the highest rates of delinquency but the differences between them and those in the lower two-thirds were not large and most of the Scheffe tests comparing those above the 67th percentile with those below were insignificant. Only when the age restriction with respect to maltreatment was lifted, admittedly distorting the temporal order between maltreatment and delinquency, were there noticeable differences. Even here, however, most of the Scheffe tests comparing those above and below the 67th percentile were not significant.

Overall, these results indicate that having a history of childhood maltreatment serious enough to warrant official intervention by Child Protective Services is a significant risk factor for later involvement in serious delinquency. Within this highly select group there appears to be at least preliminary evidence that experiencing more extreme forms of maltreatment is associated with higher rates of subsequent delinquency. That distinction, however, appears to be overwhelmed by the threshold effect of simply experiencing maltreatment serious enough to elicit official recognition.

Some qualifications to our findings are in order based on design and measurement limitations. First, while the stratified random sample used here results in a representative

sample, it yields fewer cases of maltreatment than would be available for analysis were the sample preselected on the basis of maltreatment. Because of that, it was not possible to look at gender-by-race comparisons even though some studies suggest that the effects of maltreatment may be conditioned by race and gender (Kruttschnitt et al., 1986; Widom, 1989a; 1989b). Also, as indicated above, we were unable to evaluate clearly the differential impact of our measures of maltreatment, although our data suggest the importance of finer-grained measures of maltreatment which capture dimensions of extensiveness and severity.

Second, there are limitations to the validity of our maltreatment measure. Our measure is based entirely on official records of maltreatment and researchers have noted the biases inherent in such data. For example, race and class biases may enter into an official determination of maltreatment, and this may simply reflect the tendency of disadvantaged families in urban places to be labeled by official authorities, with an iatrogenic effect on the behavior of family members, including adolescents (Pagelow, 1984). This would inflate the apparent link between maltreatment and delinquency. However, a recent study compared founded and unfounded cases of maltreatment and discovered little difference between these groups in the association between maltreatment and delinquency (Leiter et al., 1994). It is also possible that our findings understate the magnitude of the relationship, since we do not know of all instances of maltreatment in the sample.[17]

Finally, we acknowledge that we have incompletely addressed the issue of temporal order between maltreatment and delinquency. Although we conducted the analysis using only instances of maltreatment that occurred prior to age 12 (and replicated it using only instances of maltreatment prior to age 8), it is indeed possible that the behaviors which are reported as maltreatment may be reinforced by antisocial behavior patterns in some children. Indeed, interactional theory (Thornberry, 1987) suggests the importance of reciprocal effects, such that the impact of exogenous variables may be amplified or moderated by their consequences.

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17. See Barnett et al. (1993) and Giovannoni (1989) for a discussion of problems of alternative measurements of maltreatment.

Nevertheless, if, as the results reported here suggest, childhood maltreatment is a significant risk factor for adolescent delinquency, investigating the processes by which maltreatment translates itself into delinquency is warranted. While our research strengthens and clarifies the empirical link between maltreatment and later delinquency, a direct causal link is not implied by these data. An important theoretical and practical issue is to identify the intervening variables which translate early maltreatment into delinquency on the one hand, or into resilient outcomes on the other. Understanding these mechanisms may more directly lead to suggestions for how to reduce that risk.

A number of intervening mechanisms that translate risk into negative outcomes have been suggested in the literature (e.g., Cicchetti, 1989; Widom, in press; Wodarski et al., 1990; Wolfe, 1987). These include immediate developmental malfunction, changes in physiological responses, and maladaptive styles of coping and disordered behavior. Early childhood maltreatment may also affect children's attitudes towards themselves or others, through the development of faulty attributions. This range of social, behavioral, and attitudinal outcomes may, in turn, contribute to patterns of behavior which are then related to delinquency, such as aggressiveness, lack of school achievement, and inability to form prosocial peer and family attachments (Patterson et al., 1989). Moreover, some research suggests that the effect of maltreatment may be potentiated by the presence of other forms of violence, such as spouse abuse and community violence (Kruttschnitt et al., 1986; Thornberry, 1994). It is also likely that since poverty and family disruption are linked to the occurrence of maltreatment, they will continue to interact with (and may exacerbate) the effects of maltreatment (Garbarino and Plantz, 1986; Paget et al., 1993). In order to reduce negative behavioral consequences, research needs to address the range of possible intervening mechanisms that link maltreatment to delinquency.

Although these results demonstrate an association between maltreatment and delinquency, they also demonstrate that the majority of maltreated youngsters are not arrested and do not report involvement in serious delinquency (see Table 2). Many maltreated youth are,

therefore, resilient -- at least with respect to delinquent behavior. Factors related to resilience to maltreatment appear to parallel the factors which operate more generally to protect children at high risk (Rutter, 1987; Werner and Smith, 1992), for example, compensating parental support (Herrenkohl et al., 1994; Kendziora and O'Leary, 1993; Kruttschnitt et al., 1987) and intellectual capacity and school achievement (Smith et al., forthcoming; Wodarski et al., 1990; Zingraff et al., 1994). Additional research is needed to extend this line of inquiry. For example, research needs to determine whether there are protective factors which operate uniquely for different aspects of maltreatment, and whether such factors change over the course of adolescent development. Identifying the buffering factors that help youth avoid the consequences of maltreatment is important because it would help elucidate the mechanisms that disrupt the link between early maltreatment and later delinquency (Herrenkohl et al., 1994; Mrazek and Mrazek, 1987; Widom, 1991b). Interventions with maltreated children which focus on the development of such protective factors may make the difference in youth making a transition past the maltreatment experience into productive adulthood.

Evidence also indicates that we need to consider the maltreated child in a range of developmental subsystems and environments (Aber and Cicchetti, 1984; Wodarski et al., 1990). This paper has only examined the consequences of childhood maltreatment in one area -- delinquency. A history of maltreatment may have a range of possible negative consequences, for example, drug use, involvement in juvenile gangs, precocious sexual behavior, suicidal behavior, teenage parenthood, violence towards partners, and subsequent maltreatment of the next generation of children (Thornberry and Smith, 1994; Widom, 1991a; Widom, in press). We know from past research (Huizinga et al., 1991; Jessor et al., 1991) that the most serious offenders have high rates of co-occurring problem behaviors, but we do not know the role that maltreatment plays as a risk factor for this. Based on the results of this paper, it would be reasonable to hypothesize that maltreatment -- and probably more extreme forms of maltreatment -- may lead to disruption in several developmental domains, leading to multiple, co-occurring problem behaviors. Further research is needed to address this issue. If so, this

would again imply that intervention programs designed to counteract the consequences of maltreatment would have to deal with multiple and interacting problem behaviors (see Thornberry et al., forthcoming) and, conversely, that programs for multiproblem youth detect and address prior experiences of maltreatment. As we solidify findings about the range of long-term consequences that may flow from experiences of maltreatment, we will be in a better position to design and evaluate interventions which both remove barriers to optimal functioning and which promote long-term resilience.

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Table 1. Prevalence of Reported Maltreatment Prior to Age 12 by Demographic Characteristics

	Abused		
	Yes	No	n
Total Sample	13.6	86.4	1000
Gender			
Male	13.0	87.0	500
Female	14.1	85.9	500
Race			
White	16.4	83.6	179
African-American	14.0	86.0	659
Hispanic	8.7	91.3	162
Underclass Status			
Yes	19.5	80.5*	450
No	8.2	91.8*	452
Family Structure			
Both Biological Parents	3.2	96.8*	299
Other Structures	18.6	81.4*	647

* $p < .05$

Table 2. Relationship between Childhood Maltreatment and Adolescent Involvement in Delinquency

Panel A
Prevalence of Delinquency

	Official	General	Serious	Moderate	Minor	Violent
Maltreated:						
Yes	45.1	78.8	42.4	71.3	45.3	69.6
No	31.7*	69.8*	32.7*	55.6*	37.2*	56.0*
(n)	(1000)	(889)	(889)	(889)	(889)	(889)
Logistic Regression Coefficient+	.54*	.23	.29	.55*	.32	.45*
Change in Probability++	.13	.05	.07	.13	.08	.11
(n)	(892)	(823)	(823)	(823)	(823)	(823)

Panel B
Frequency of Delinquency

	Official	General	Serious	Moderate	Minor	Violent
Maltreated:						
Yes	1.4	79.4	5.4	13.0	2.4	11.0
No	.8*	49.4*	2.8*	8.1*	2.6	5.9*
(n)	(1000)	(889)	(889)	(889)	(889)	(889)
OLS Unstandardized Coefficient+	.21*	.33	.23*	.33*	.06	.30*
(n)	(892)	(823)	(823)	(823)	(823)	(823)

*$p < .05$, one-tailed tests.

+Holding constant gender, race/ethnicity, underclass status, family structure and mobility since first grade.

++The change in the probability of delinquency is assessed at the mean of the dependent variable.

Table 3. Relationship Between the Frequency of Delinquency and Indicators of the Frequency, Severity, Duration and Type of Child Maltreatment for Maltreatment Occurring Prior to Age 12

Panel A
Number of Incidents of Maltreatment

	Non Maltreated	Less Than 67 Percentile	Greater Than 67 Percentile	Scheffe Tests[a]
Official	.82	1.11	2.34*	1,3 2,3
Serious	2.75	5.11	6.22*	--
Violent	5.89	10.95	11.29*	1,2
Moderate	8.09	13.35	12.09	--
n[b]	763	87	37	

Panel B
Total Severity of All Incidents

	Non Maltreated	Less Than 67 Percentile	Greater Than 67 Percentile	Scheffe Tests[a]
Official	.82	1.04	2.02*	1,3 2,3
Serious	2.75	4.31	6.83*	1,3
Violent	5.89	11.05	11.07*	1,2 1,3
Moderate	8.09	14.05	11.66	--
n[b]	763	68	56	

Panel C
Duration of All Incidents

	Non Maltreated	Less Than 67 Percentile	Greater Than 67 Percentile	Scheffe Tests[a]
Official	.83	1.01	2.12*	1,3 2,3
Serious	2.75	4.74	6.69*	--
Violent	5.89	10.94	11.44*	1,2, 1,3
Moderate	8.18	12.69	12.14	--
n[b]	763	74	49	

Panel D
Number of Types of Maltreatment Across All Incidents

	Non Maltreated	Less Than 67 Percentile	Greater Than 67 Percentile	Scheffe Tests[a]
Official	.82	1.21	2.29*	1,3 2,3
Serious	2.75	4.73	7.80*	--
Violent	5.89	10.99	11.26*	1,2
Moderate	8.09	13.30	11.87	--
n[b]	763	96	29	

[a]Significant Scheffe tests ($p < .05$) are noted by numbers referring to the different groups: 1 = None, 2 = Less than 67th percentile, and 3 = Greater than 67th percentile.

[b]The n's presented are for the self-report measures. The n's for official delinquency are somewhat larger, totaling at least 995 cases in these analyses.

*Significant One-Way ANOVA ($p < .05$).

Table 4. Relationship Between the Frequency of Delinquency and Indicators of the Frequency, Severity, Duration and Type of Child Maltreatment for Maltreatment Occurring at Any Age

Panel A
Number of Incidents of Maltreatment

	Non Maltreated	Less Than 67 Percentile	Greater Than 67 Percentile	Scheffe Tests[a]
Official	.70	1.51	2.12*	1,2 1,3
Serious	2.47	4.70	7.60*	1,3
Violent	5.64	8.95	13.32*	1,3
Moderate	7.43	14.24	12.56*	1,2
n[b]	698	133	56	

Panel B
Total Severity of All Incidents

	Non Maltreated	Less Than 67 Percentile	Greater Than 67 Percentile	Scheffe Tests[a]
Official	.70	1.54	1.84*	1,2 1,3
Serious	2.47	4.95	6.38*	1,3
Violent	5.64	9.42	11.36*	1,3
Moderate	7.43	13.56	13.99*	1,2
n[b]	698	109	80	

Panel C
Duration of All Incidents

	Non Maltreated	Less Than 67 Percentile	Greater Than 67 Percentile	Scheffe Tests[a]
Official	.71	1.65	1.92*	1,2 1,3
Serious	2.67	4.26	6.48*	1,3
Violent	5.85	8.89	11.40*	1,3
Moderate	7.58	14.54	11.57*	1,2
n[b]	698	129	60	

Panel D
Number of Types of Maltreatment Across All Incidents

	Non Maltreated	Less Than 67 Percentile	Greater Than 67 Percentile	Scheffe Tests[a]
Official	.70	1.47	2.35*	1,2 1,3, 2,3
Serious	2.47	4.57	9.05*	1,3
Violent	5.64	9.08	14.37*	1,2, 1,3
Moderate	7.43	12.49	18.19*	1,3
n[b]	698	148	41	

[a]Significant Scheffe tests ($p < .05$) are noted by numbers referring to the different groups: 1 = None, 2 = Less than 67th percentile, and 3 = Greater than 67th percentile.

[b]The n's presented are for the self-report measures. The n's for official delinquency are somewhat larger, totaling at least 982 cases in these analyses.

*Significant One-Way ANOVA ($p < .05$).

Appendix 1

EXEMFLARS FROM THE CICCHETTI-BARNETT CLASSIFICATION SYSTEM TO INDICATE DIFFERENT LEVELS OF SEVERITY FOR PHYSICAL ABUSE

1= The caregiver inflicted minor marks on the child's body during a spanking; and there were no marks to the neck or head.

Reports indicated that the caregiver had beaten the child; no other information was given.

The caregiver was reported to have spanked the child with a traditional "spanking instrument" (e.g., a switch, a soft belt, a ruler, a paddle, a hand), with marks on or below the shoulders.

2= The caregiver inflicted non-minor bruises to the child's body from any incident.

The caregiver spanked the child with a "questionably appropriate object" (e.g., a hair brush, a belt buckle, an electrical cord), or kicked or punched the child with a fist, leaving marks on the child's body.

3= The caregiver inflicted marks on the child's face (e.g., a black eye).

The caregiver's rough handling of the child resulted in serious bruises (e.g., required stitches or minor medical attention) (see #2).

The caregiver inflicted minor burns (e.g., minor cigarette burns) to the child's body.

4= The caregiver hit the child with an "inappropriate object" (e.g., a baseball bat, a telephone), or threw the child against the wall, but any injuries which were sustained did not require hospitalization.

The caregiver attempted to choke or smother the child, but no emergency medical care was required.

The caregiver inflicted serious burns (second degree) to the child's body, but the injury did not require hospitalization.

The caregiver inflicted any injury which required some hospital care, such as treatment in the Emergency Room, but did not require hospitalization for more than 24-hours (e.g., stitches, broken bones, non-minor sprain).

5= The caregiver inflicted any injury to the child which required hospitalization (e.g., severe/multiple burns, internal injuries), or which was physically damaging, or disfiguring (e.g., resulting in brain damage, severe scarring, crippling).

Appendix 2

DELINQUENCY SCALES

Since we interviewed you last time, have you ...

General Delinquency:

1. Carried a hidden weapon?
2. Been loud or rowdy in a public place where someone complained and you got in trouble?
3. Been drunk in a public place?
4. Damaged, destroyed, marked up, or tagged somebody else's property on purpose?
5. Set fire on purpose or tried to set fire to a house, building, or car?
6. Gone into or tried to go into a building to steal or damage something?
7. Tried to steal or actually stolen money or things worth $5 or less?
8. Tried to steal or actually stolen money or things worth $5-$50?
9. Tried to steal or actually stolen money or things worth between $50-$100?
10. Tried to steal or actually stolen money or things worth more than $100?
11. Tried to buy or sell things that were stolen?
12. Taken someone else's car or motorcycle for a ride without the owner's permission?
13. Stolen or tried to steal a car or other motor vehicle?
14. Forged a check or used fake money to pay for something?
15. Used or tried to use a credit card, bank card, or automatic teller card without permission?
16. Tried to cheat someone by selling them something that was not what you said it was or that was worthless?
17. Attacked someone with a weapon or with the idea of seriously hurting or killing them?
18. Hit someone with the idea of hurting them?
19. Been involved in gang or posse fights?
20. Thrown objects such as rocks or bottles at people?
21. Used a weapon or force to make someone give you money or things?
22. Made obscene phone calls?
23. Been paid for having sexual relations with someone?
24. Physically hurt or threatened to hurt someone to get them to have sex with you?
25. Sold marijuana, reefer or pot?
26. Sold hard drugs such as crack, heroin, cocaine, LSD or acid?

Serious Delinquency:

1. Gone into or tried to go into a building to steal or damage something?
2. Tried to steal or actually stolen money or things worth between $50-$100?
3. Tried to steal or actually stolen money or things worth more than $100?
4. Stolen or tried to steal a car or other motor vehicle?
5. Attacked someone with a weapon or with the idea of seriously hurting or killing them?
6. Been involved in gang or posse fights?
7. Used a weapon or force to make someone give you money or things?
8. Physically hurt or threatened to hurt someone to get them to have sex with you?

Moderate Delinquency:

1. Been drunk in a public place?
2. Damaged, destroyed, marked up, or tagged somebody else's property on purpose?
3. Tried to steal or actually stolen money or things worth $5-$50?
4. Taken someone else's car or motorcycle for a ride without the owner's permission?
5. Forged a check or used fake money to pay for something?
6. Used or tried to use a credit card, bank card, or automatic teller card without permission?
7. Hit someone with the idea of hurting them?
8. Thrown objects such as rocks or bottles at people?
9. Made obscene phone calls?

Minor Delinquency:

1. Been loud or rowdy in a public place where someone complained and you got in trouble?
2. Tried to steal or actually stolen money or things worth $5 or less?

Violent Delinquency:

1. Attacked someone with a weapon or with the idea of seriously hurting or killing them?
2. Hit someone with the idea of hurting them?
3. Been involved in gang or posse fights?
4. Thrown objects such as rocks or bottles at people?
5. Used a weapon or force to make someone give you money or things?
6. Physically hurt or threatened to hurt someone to get them to have sex with you?